THE CHRONICLE OF HIGHER EDUCATION
The Faculty

From the issue dated November 11, 20(

The Laws of Physics

A postdoc's pregnancy derails her career

By ROBIN WILSON

West Lafayette, Ind.

Related materials

Chart: The effect of a baby on a postdoc's career

List: One female postdoctoral researcher's list of the pros and cons c having a baby now versus putting it of for a few years

Forums: Join an online discussion about whether women who hold postdoctoral positions in the sciences jeopardize their careers if they have babies.

As a postdoctoral researcher, Sherry M.J. Towers thought she had all the rights of a university employee. After a careful reading of her university's handbook, she calculated that she could take three months off after the birth of her second child, in 2003.

But before her daughter was three weeks old, Ms. Towers was back in her research office — making presentations at meetings, consulting with a graduate student she supervised, and finishing a paper. Her infant daughter, still too young for a day-care center, sat stashed in a car seat under Ms. Towers's desk.

The source of the problem, says Ms. Towers, was her supervisor, John Hobbs, an associate professor of physics at the State University of New York at Stony Brook. Mr. Hobbs does researc at Fermi National Accelerator Laboratory, a federal facility outside Chicago, which is where Ms. Towers, also employed by Stony Brook, served as a postdoc. She says he instructed her not tell the campus's human-resources office that she was pregnant. Then he refused to write a letter of recommendation for future faculty jobs unless she returned to work almost immediately afte giving birth. When she did, says Ms. Towers, he piled on assignments. She finally complained to Stony Brook in January 2004, and two months later the university told her it would not extend her contract. "I could see my career crumbling before my eyes," says Ms. Towers.

She filed a federal lawsuit late last year in the U.S. District Court in New York's Eastern District, charging the university with gender discrimination. But her career as a promising young high-energy physicist is over. Last spring Ms. Towers, whose research had yielded evidence of a new particle, applied for five faculty jobs, but didn't receive a single response. Her prospects, she says, were doomed without the endorsement of Mr. Hobbs. This fall, at age 38, she started over, pursuing a master's degree i statistics at Purdue University here, where her husband, Matthew Jones, is an assistant professor of physics.

"There are fewer than 10,000 particle physicists in America. That's a small town," says Ms. Towers. "When you apply for a job, people ask around casually about who knows you and what

you've done. The fact that you've had problems that resulted in a lawsuit can do you in."

Meanwhile, Mr. Hobbs has been promoted at the lab, where Ms. Towers worked for him on a high-energy particle-physics experiment called Run II DZero. Mr. Hobbs declined to comment for this article, as did the chairman of the physics department and other Stony Brook officials. But the university has denied that it discriminated against Ms. Towers, and plans to ask a judge to dismiss her claim.

The backdrop to the demise of Ms. Towers's career is the highly competitive nature of academic science, which leaves little time for female scholars to have children. Young scientists who work as postdoctoral researchers are particularly vulnerable because their careers are dependent on the goodwill of a single faculty supervisor. Graduate students can change advisers if they clash, and assistant professors can file a grievance if they feel they have been wronged, but postdocs, who usually work on a year-to-year basis, do not typically have those options.

"You're in a really, really precarious position as a postdoc," says Deborah A. Harris, a staff scientist at Fermilab who worked as a postdoctoral researcher there herself. "Your treatment is completely dependent on who your adviser is."

Invisible Employees

The number of postdoctoral researchers in academe has more than doubled in the last two decades — to 46,807 in 2003, according to the National Science Foundation. The vast majority are in the biomedical sciences and engineering, but postdocs are also common in physics. More than half of those who earned a Ph.D. in physics in 2000 and 2001 went on to work as postdoctoral scholars. The increase has occurred because of an imbalance between the rising number of Ph.D.'s universities are producing and the declining number of tenure-track professors they are hiring. As a result, universities have created the postdoctoral way station, where fellows spend two to six years performing research under the tutelage of a faculty supervisor before going on, if they are lucky, to a professorial job themselves.

Despite their increasing numbers, postdoctoral researchers are among the least visible people on campuses. "A lot of institutions have trouble even naming their postdocs," says Geoffrey M. Davis, a visiting scholar at Sigma Xi, a scientific honor society that published the results of a survey of 7,600 postdocs last year. Most postdocs, he says, are not even classified as university employees.

Considering that they hold advanced degrees, postdoctoral researchers typically work long hours for little pay. The average postdoc earned $38,000 in 2003 for a 51-hour workweek, according to the Sigma Xi report. In that survey, almost all postdoctoral researchers said their universities provided health insurance, but only 36 percent said they had family leave, only 42 percent said they had disability benefits, and just 40 percent reported being eligible for a retirement plan. A hefty percentage of postdocs did not even know whether they qualified for such benefits.

In the last few years, several organizations — including the Association of American Universities, the Alfred P. Sloan Foundation, and the National Academy of Sciences — have encouraged universities to increase pay for postdocs, set out clear work responsibilities, and limit the length of time young scholars spend in the jobs.

But one of the most crucial elements — the fact that a postdoc's future is usually dependent on the recommendation of a single supervisor — hasn't changed. In a 2000 publication, the National Academy said postdocs often fall through the cracks on campuses. "There is often no clear administrative responsibility for assuring their fair compensation, benefits, or job security," says the guide, called *Enhancing the Postdoctoral Experience for Scientists and Engineers.* "The sole person to whom they can turn for assistance is the principal investigator who hired them and upon whom they depend not only for support in their current position but also for help in advancing their careers."

Collision Course

Alyson Reed is executive director of the National Postdoctoral Association, which was founded three years ago. She agrees that a faculty supervisor can make or break a young scientist's future.

"The whole reason for doing a postdoc is to advance your career, expand your horizons, polish your CV, and get those extra publications," she says. "You're at this critical juncture where maintaining a good relationship with your mentor is just crucial."

Asking for time off for maternity leave can strain that relationship. Research projects are typically backed by federal grants, which impose strict timelines on scientists to produce results. If a female postdoctoral fellow takes three months off, who will complete her work?

"Suppose I'm a professor and I have something to finish and I'm banking on a postdoc to get some results," says Meenakshi Narain, an associate professor of physics at Boston University. "If I don't have that person in my lab, then what do I do?"

Right now, it is up to faculty supervisors to find a way to cope. Instead, Ms. Narain believes universities and federal grant agencies should step in. She is trying to persuade them to help faculty members hire temporary replacements when postdoctoral scholars have babies.

Geraldine L. Richmond, a professor of chemistry and materials science at the University of Oregon, agrees. "If I break a piece of equipment that's really expensive, I call in and ask for a supplement" from the federal grant agency, says Ms. Richmond. "Why is it harder to get a supplement for a pregnancy than it is for a piece of broken laser equipment?"

Because the postdoctoral years often collide with a woman's prime childbearing years, conflicts over maternity leave are bound to arise. According to Sigma Xi, more than half of research fellows are between the ages of 30 and 35, and about 10 percent are over 40. "You've got people spending long periods of time earning a Ph.D., and then working longer as postdocs," says Mr.

Davis. "People could be in a situation where they don't feel they can do basic things like reproduce and have a family. That's a crazy trade-off to ask people to make." According to Mr. Davis's study, 29 percent of female postdocs have children, compared with 37 percent of males.

Although they still struggle, women in the humanities and social sciences seem to have begun figuring out how to balance children with an academic career. By comparison, women in science seem light-years behind. In part that is because there are so few of them — making science a very male culture. For example, just 18 percent of those who earned doctoral degrees in physics in 2003 were female. And in 2002, women represented just 16 percent of assistant professors of physics, 11 percent of associate professors, and 5 percent of full professors.

"The sciences present an even more rigid and inflexible career path than exists in academia in general," says Joan C. Williams, a professor at the University of California's Hastings College of Law who has written about problems facing women in academe. "It is not enough to get a Ph.D. or have a postdoc in the sciences. You then have to get a sequence of grants. If you have a baby and take a reasonable amount of time off, then you are off-sequence for those grants. And if you don't keep getting those grants, then you're nobody professionally."

A Quick Return

As a Stony Brook employee, Ms. Towers was better off than most young scientists. When she started working at Fermilab in 2000, she earned $42,000 a year in a position that she says she was told would last up to six years. That is long for a postdoc, but it was routine at Stony Brook. In particle physics, says Ms. Towers, if you want to be a professor at a major research university, you must first spend at least a few years working as a postdoctoral researcher.

Postdocs at Stony Brook are eligible for maternity leave. That meant that when she became pregnant two years after starting her job, Ms. Towers was entitled to take three months of sick and vacation leave she had accrued, plus up to seven more months of unpaid leave.

None of that mattered, however, when Mr. Hobbs told her she had to quickly return to work. "He told me I was going to have to come back within a couple of weeks, and that I was going to have to hit the ground running," recalls Ms. Towers.

Although Ms. Towers says she knew Mr. Hobb's request was unfair, she didn't complain right away. "As a woman physicist, you've spent the last 15 years training to get to that point in your career, and you absolutely need his recommendation letter," she says. "What are you going to say: Forget it? Screw your letter?"

70 Hours a Week

Because she was stationed at Fermilab, Ms. Towers could not just walk down the hall to talk to the chairman of physics, or across the Stony Brook campus to complain to the human-resources office. Indeed, the distance had the effect of isolating her and making her even more reluctant to speak out.

In the months after she gave birth, Ms. Towers says in the suit, Mr. Hobbs repeatedly threatened to withhold his recommendation, as he pushed her to work harder and harder. By June 2003, two months after her daughter was born, Ms. Towers says she was working 70 hours a week.

The Chronicle could not find anyone who would confirm Ms. Towers's version of the events at Stony Brook or Fermilab, in part because she did not make her complaints widely known. Her lawsuit, however, contains references to numerous e-mail messages she sent, meetings she attended, and papers she wrote that Ms. Towers says prove she was back at work within three weeks after giving birth.

John Womersley, who was a staff scientist at Fermilab before moving to the United Kingdom to work at Rutherford Appleton Laboratory last August, wrote an open letter on behalf of Ms. Towers in February 2004, at her request. He wrote that she had made "strong contributions" as a researcher at Fermilab and had a "reasonable expectation" of landing a faculty job. He called the amount of work Mr. Hobbs asked of Ms. Towers "extremely challenging" and in one instance "impossible for one person to complete."

Ms. Towers says that by July 2003, with her physical and mental health starting to suffer, she asked the physics department if she could scale back to 35 hours per week. Mr. Hobbs, she contends in her lawsuit, consented and cut her pay by 40 percent. Within five months, at her request, she was back to working full time.

In her lawsuit, Ms. Towers says Stony Brook's physics department was not accustomed to dealing with female researchers who were also mothers. She is only the second female postdoc in 40 years to have children, her suit contends, and the first in 15 years.

In fact, Ms. Towers is a bit unusual as female scientists go. When she got to Stony Brook in 2000, she already had a 3-year-old daughter, Kelsey, who was born while she was earning her doctorate at Carleton University, in Ottawa.

"Having a baby was actually the making of me as a physicist," she said in an interview one evening last month at her home here near Purdue. "When you sit down to do something, there is no messing around. You go in to work, and you work."

A Discovery

Despite the problems she had with Mr. Hobbs, Ms. Towers did manage to make progress at work after the birth of her second daughter, Katie. In December 2003, she discovered evidence of a new particle — the Bc meson — which had been assumed to exist but never before observed. Fermilab announced the finding in a press release in August 2004.

By then, however, Ms. Towers knew she was on her way out. Postdoctoral scientists work on contracts that are typically extended one to two years at a time. In March 2004, she says, the physics department refused her request to extend her contract for another two years. When she filed a complaint with the U.S. Equal Employment Opportunity Commission the following month,

Stony Brook agreed to keep her on until June of this year.

Although the EEOC said it did not have enough information to decide the case on its merits, it cleared the way for Ms. Towers to file suit.

In its response to her complaints, Stony Brook has said the physics department thought Ms. Towers was overwhelmed and planned to quit. So the department hired another postdoctoral researcher to take her place at Fermilab, and didn't have enough money to extend her contract for two more years. As for the maternity leave, the university has changed its tune. At first, in response to Ms. Towers's EEOC complaint, it contended that it had indeed given Ms. Towers "a period" of paid maternity leave, although it didn't specify how much. Now, in its initial response to her lawsuit, the university does not mention whether it gave her the leave, but says her suit should be thrown out because the complaints were not made within 300 days of when she says the discrimination occurred — something that is required by law. In the suit, Ms. Towers is asking for unspecified monetary damages to compensate for the loss of her career.

Robert L. McCarthy, a professor of physics at Stony Brook, says he is not clear on the details of the dispute between Ms. Towers and Mr. Hobbs. But he says the word around the department about what happened is this: "She had a baby. She asked for a leave of absence and we arranged a half-time appointment. She eventually resigned because of taking care of her baby and then decided to leave to join her husband at Purdue. Then she changed her mind after already submitting her resignation."

Last summer Ms. Towers and her husband moved to a Victorian house here with their two young daughters. Ms. Towers is now a full-time graduate student again, this time in statistics. As a physicist, one of her strengths was statistics, and she spoke at other universities about how physicists could make the most of their experimental data. Now, she wants to put that expertise to use in health-care policy, where she says there are plenty of jobs.

At one point, Ms. Towers had hoped to be a tenure-track professor in physics at Purdue, like her husband. Now the closest she gets is stopping by the physics department each morning for a cup of coffee before heading off to her classes.

POSTDOCS, BY THE NUMBERS

Rising population

The number of postdoctoral researchers has more than doubled in the past two decades.

1985	22,387
2003	46,807

Employment status

In 2003, postdoctoral researchers reported they were classified as:

Neither employees nor students	40%
Employees	34%

Students	7%
Don't know	9%
Other	9%

Salaries

Postdocs, on average, earn less than other college graduates between ages 28 and 37.

Postdoc	$38,000
Bachelor's-degree holder	$45,000
Master's-degree holder	$55,950

Age of postdocs in 2003:

40 and over	9%
36 to 39	17%
30 to 35	58%
29 and under	16%

Families

Status of postdocs in 2003:

Postdocs who were married or had a partner	69%
Female postdoctoral fellows who had kids	29%
Male postdoctoral fellows who had kids	37%

Note: Figures are for postdoctoral fellows in all fields. Figures in pie charts do not add to 100 percent because of rounding

SOURCES: National Science Foundation; Sigma Xi, the Scientific Honor Society; U.S. Census Bureau

SHOULD I HAVE A BABY NOW, OR WAIT?

Veronique Boisvert has drawn up a chart of the pros and cons of having a baby now versus putting it off for a few years. Ms. Boisvert, who is employed by the University of Rochester but works at Fermilab, used a point system to weigh the two windows in her career that she believes present the best opportunity. She recently crunched the numbers and decided she should try to get pregnant soon. First, though, she says, she will have to marry her boyfriend.

Pros and cons of having a child now

Pros	Points	Cons	Points
Quicker to get pregnant	3	Slow down or halt data analysis	10
Easier pregnancy	3	Hinder preparations for job interviews	10
Easier delivery	3	Higher risk of not getting faculty job	20

More energy to take care of young child	3	Less money available	5
More chances to have 2 children	8	Stress on the relationship	3
If fertility problems, more time to deal with them	25	House and location not settled	5
No students or classes	7		
No tenure process ongoing	7		
More years being a family	7		
What my partner prefers	5		
Total	71	Total	53

http://chronicle.com
Section: The Faculty
Volume 52, Issue 12, Page A10